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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/542,642

07/19/2005

Ho-Suk Kim

08015.0023

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04/15/2009

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EXAMINER

DAVIS, PATRICIA A

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

04/15/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                   |  |
|------------------------------|--------------------------------------|-----------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/542,642 | <b>Applicant(s)</b><br>KIM ET AL. |  |
|                              | <b>Examiner</b><br>PATRICIA DAVIS    | <b>Art Unit</b><br>4111           |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 19 July 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. In response to the amendment received December 11, 2008:
  - a) Claims 1-9 are still pending;
  - b) The Objections to the Drawings has been withdrawn in light of the removal of the recitation of "using a dispenser"
  - c) The 35 U.S.C. 102(b) rejections have been overcome by the amendment, but the 35 U.S.C. 103(a) prior art rejections of record stand

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 3, 4-6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling.

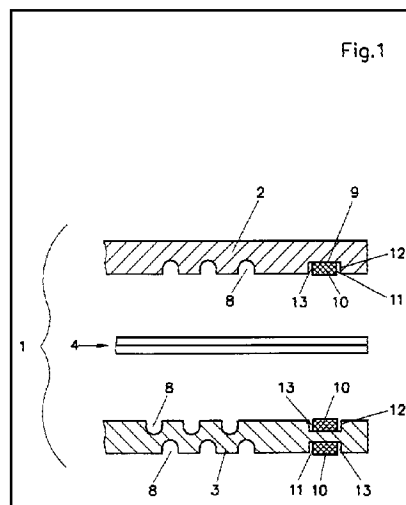
Regarding claim 1, Schilling teaches a sealing structure for polymer electrolyte fuel cell comprising: a bipolar plate (2 and 3) with sealing groove (9) (see col. 3, lines 48-50) and a gasket (sealing element 10) interposed between said bipolar plate and a membrane electrode assembly (MEA 4; figure 1). Schilling further teaches an anchor (10 sealing element) in contact with said sealing groove (9) (col. 4, lines 23-35; figure 4B). Schilling does not specifically teach that the anchor width is greater than the sealing groove.

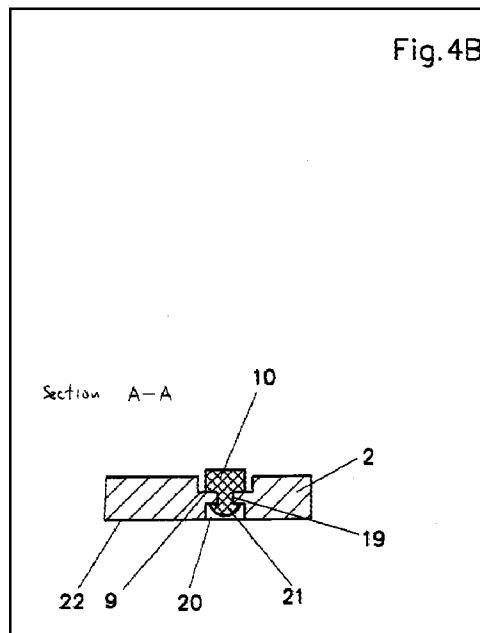
Consequently, as evidenced by Schilling, the width of the anchor is a recognized known result effective variable whose determination would accordingly have been within the ambit of a person of ordinary skill in the art without undue experimentation. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). The discovery of an optimum value of a known result effective variable, without producing any new or unexpected results, is within the ambit of a person of ordinary skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980) (see MPEP § 2144.05). Schilling discloses that the anchor (10 sealing element) inserted into the groove (9) is injected and carried out in such a way that the seals can expand transversely and retain their spring action. This forms a reliable seal with uniform distribution of forces and pressure (see col. 3, lines 44-60). It

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is known that the width of the anchor can be changed to be greater than the width of the sealing groove for the known result effect variable.

Therefore, it would have been obvious to a person of ordinary skill in the art to make this modification to optimize the width of the anchor to get the proper sealing for the polymer electrolyte fuel cell.





Regarding claim 3, Schilling does not specifically teach that the said anchor has a width of 1.5 times the width of the sealing groove. However, it would be known by one with ordinary skill in the art to change the size or proportion of the embodiments to properly seal the structure (col. 4, lines 23-35). In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device (MPEP § 2144.04).

Therefore, it would have been obvious to one with ordinary skill in the art to change the size or proportion to properly seal the structure of the polymer electrolyte fuel cell.

Regarding claim 4, Schilling does not specifically teach a sealing structure for a polymer electrolyte fuel cell, wherein said sealing groove (9) and said anchor (10 sealing element) have the same depth (figure 4B).

Consequently, as evidenced by Schilling, the depth of the disclosed sealing groove and anchor is a recognized known result effective variable whose determination would accordingly have been within the ambit of a person of ordinary skill in the art without undue experimentation. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). The discovery of an optimum value of a known result effective variable, without producing any new or unexpected results, is within the ambit of a person of ordinary skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980) (see MPEP § 2144.05). Schilling discloses that the anchor (10 sealing element) inserted into the groove (9) is injected and carried out in such a way that the seals can expand transversely and retain their spring action. This forms a reliable seal with uniform distribution of forces and pressure (see col. 3, lines 44-60). It is known that the depth of the sealing groove and anchor can be changed for the known result effect variable.

Therefore, it would have been obvious to one with ordinary skill in the art to modify the sealing groove and anchor for a polymer electrolyte fuel cell to have the same depth.

Regarding claim 5, as shown in figure 4B, Schilling teaches a sealing structure for polymer electrolyte fuel cell (sealing system; fig. 4B), wherein said anchor (10

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sealing element) is formed vertically to a route direction of said sealing groove (9) in the periphery of said sealing groove (see col. 4, lines 23-35; fig. 4B).

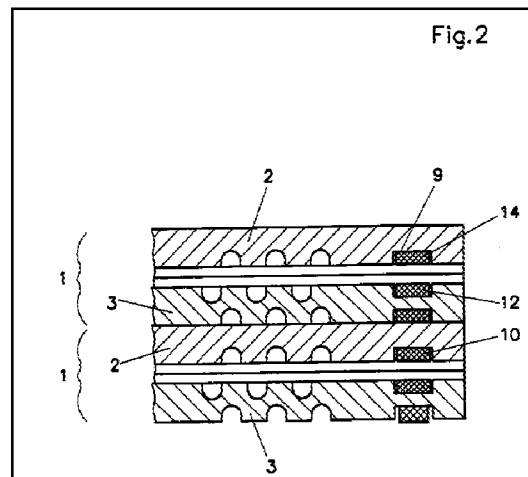
Regarding claim 6, Schilling teaches the sealing structure for polymer electrolyte fuel cell, wherein said anchors (10 sealing elements ) on each of said plate (1 single cell) are located in the front of said membrane electrode assembly (see col. 3, line 61- col. 4, line 1; fig. 2).

Schilling does not teach the sealing structures being placed at the rear of the membrane electrode assembly, with the front and rear plates located symmetrically to each other.

However, the Courts have held that the mere duplication of parts, without any new or unexpected results, is within the ambit of one of ordinary skill in the art. See *In re Harza*, 124 USPQ 378 (CCPA 1960) (see MPEP § 2144.04).

By adding more anchors around the periphery of the sealing sites it would be able to absorb more pressure effectively by distributing the pressure uniformly. Therefore, in this case it would be obvious to one with ordinary skill in the art to add anchors to both the rear and front of the membrane electrode assembly and locate them symmetrically to each other (see figure 2).





Regarding claim 9, Schilling also teaches a polymer electrolyte fuel cell comprising said sealing structure (col. 3, lines 39-60).

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling in view of Sasaki et al. (U.S. Patent No. 6,337,120) (hereinafter "Schilling").

Regarding claim 7, Schilling does not specifically teach that the type of rubber used for the sealing structure be made of silicon, fluorine, or olefin.

However, Sasaki teaches a rubber silicon material for the sealing structure for the polymer electrolyte fuel cell (see col. 4, line 48).

The Courts have held that the selection of a known material, which is based upon its suitability for the intended use, is within the ambit of one of ordinary skill in the art. See *In re Leshin*, 125 USPQ 416 (CCPA 1960) (see MPEP § 2144.07).

Therefore, it would be obvious to a person with ordinary skill in the art to recognize the use of a silicon rubber material for the sealing structure because of its low viscosity which makes it easy to inject into the mold (col.4, lines 51-52).

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling in view of Sakumato et al. (U.S. Pub. No. 2002/0106954 A1) (hereinafter "Sakumato").

Regarding claim 8, Schilling teaches a graphite bipolar plate (col. 2, lines 23-24), but does not specifically teach the type of elastic material used for the gasket.

However, Sakumoto teaches a carbon gasket (or flange) (see par. 0005 and 0006).

The Courts have held that the selection of a known material, which is based upon its suitability for the intended use, is within the ambit of one of ordinary skill in the art. See *In re Leshin*, 125 USPQ 416 (CCPA 1960) (see MPEP § 2144.07).

Furthermore, the combination of familiar elements is likely to be obvious when it does no more than yield predictable results. See *KSR Int'l v. Teleflex Inc.*, 127 Sup. Ct. 1727, 1742, 82 USPQ2d 1385, 1397 (2007) (see MPEP § 2143).

Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate the use of a carbon bipolar plate and gasket to fabricate the sealing structure for the polymer electrolyte fuel cell.

### ***Response to Arguments***

6. Applicant's arguments filed December 11, 2008 have been fully considered but they are not persuasive.

Applicant argues that:

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"Schilling does not specifically teach that the anchor width is greater than the sealing groove." Office Action at 5. However, to cure the deficiencies of Schilling, the Examiner asserted, "it would have been obvious to a person of ordinary skill in the art..., to optimize the width of the sealing groove to get the proper sealing for the polymer electrolyte fuel cell." Office Action at 6. The Examiner's assertion is not correct. Amended claim 1 recites, "an anchor in contact with said sealing groove, whose width is greater than the width of said sealing groove," (emphasis added). Amended claim 1 does not recite any optimum width of the claimed sealing groove. As discussed above, Schilling fails to teach or suggest the claimed "anchor." Accordingly, Schilling cannot disclose the width of an undisclosed entity, nor can Shilling compare the width of an undisclosed entity with the width of groove 9. For at least this reason, Schilling fails to teach or suggest, "an anchor..., whose width is greater than the width of said sealing groove," as recited in claim 1 (emphasis added). In view of the above, Schilling fails to teach each and every element of claim 1 and cannot anticipate claim 1.

However, it is unclear in claim 1 if the gasket and the anchor are two different parts. Since the applicant does not explicitly state that the anchor and gasket are two separate entities the claim will be interpreted such that the anchor and gasket could be one entity or two separate entities as shown in the figures of Schilling. These

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arguments are not commensurate in scope with the claims as written. Therefore, the Schilling reference does teach or suggest all of the claimed features in claim 1.

Applicant argues that all claims dependent on claim 1 are allowable for at least the reason claim 1 is allowable. However, applicant's arguments regarding claim 1 are not persuasive, and claim 1 and their dependent claims are not found allowable.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICIA DAVIS whose telephone number is (571)270-7868. The examiner can normally be reached on 7:30am-5pm EST. Monday-Friday, alternate Fridays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

P.D.

/PATRICK RYAN/

Supervisory Patent Examiner, Art Unit 1795